

What is claimed is:

- Sub
BA
11/16/99
1. A composite rigid foam structure comprising:
a rigid foam substrate having a surface and pores, said pores having an average diameter, and
a formed in situ continuous skin substantially uniformly bonded directly to at least a portion of said surface, said skin generally penetrating said rigid foam substrate to a depth of less than about 5 of said average pore diameters.
 2. A composite structure of claim 1, wherein said rigid foam substrate comprises an inorganic material having at least from about 20 to 30 pores per linear inch.
 3. A composite structure of claim 1, wherein the rigid foam substrate and the skin are made of about the same inorganic materials.
 4. The composite structure of claim 1, wherein at least one of said rigid foam substrate and skin comprises metal.
 5. The composite structure of claim 1, wherein said foam substrate and said skin comprise different metals.
 6. The composite structure of claim 1, wherein at least one of said rigid foam substrate and skin comprises ceramic.

7. The composite structure of claim 1, wherein said rigid foam substrate comprises carbon.

8. The composite structure of claim 1, wherein at least one of said rigid foam substrate and skin comprises glass.

9. The composite structure of claim 1, wherein said rigid foam substrate and said skin comprise polymers.

10. The composite structure of claim 1, wherein one of said rigid foam substrate and said skin comprises metal and the other comprises ceramic.

11. The composite structure of claim 1, wherein said rigid foam substrate comprises ceramic and said skin is comprises molybdenum disilicide.

12. The composite structure of claim 1 wherein the continuous skin has penetrated into said rigid foam substrate for a depth of less than approximately 2 average pore diameters.

Sub/321 cont

~~13. A method of forming a composite rigid foam structure comprising:~~
~~selecting a solid three-dimensional rigid foam substrate having at least one surface and pores, said pores in said foam substrate being defined by their peripheries and having an average diameter, and~~
~~thermally spraying a material that is at least partially fluid onto said surface to form a solid phase skin on said surface, said skin being attached to substantially all of said peripheries, and said skin extending no more than about 5 average pore diameters into said rigid foam substrate.~~

14. A method of forming a composite foam structure of claim 13 including selecting a hollow three-dimensional rigid foam substrate having inner and outer surfaces, and thermally spraying said material on at least one of said inner and outer surfaces.